APPENDIX MODUL 2 : MEDICAL GENETICS

Module name	Medical Genetics
Module level, if applicable	Basic Medical Education
Code, if applicable	20Y00510802
Subtitle, if applicable	-
Course, if applicable	Basic Medical Specialist Education
Semester(s) in which the module is taught	I
Person responsible for the module	1. Prof. Dr Nur Nasry Noor, MPH Prof. dr. Husein Albar, Sp.A(K) Sc 2. Prof Dr Nur Nasry Noor, MPH
Lecturer	1. Prof. Dr Budu, PhD, Sp.M(K), M.Med.Ed 2. dr. Upik A. Miskad, Ph.D, Sp.PA(K)
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	This course is a compulsory course and must be passed by students before completing the first semester
Type of teaching, contact hours	• Learning methods in this subject are: • Lecture (26,67 hours) • Structured Assignment (32 hours) • Private Study (32 hours) Contact hours for Theory is 90,67 hours
Workload	For this course, students are required to meet a minimum hours in one semester, which consist of: • Lecture (0,89 ECTS) • Structured Assignment(1,07 ECTS) • Private Study (1,07 ECTS) Total ECTS: 3,02
Credit points	2 credit points (equivalent with 3,02 ECTS)
Requirements according to the examination Regulations	Students must have attended all classes and submitted all class assignments that are scheduled before final tests.
Recommended prerequisites	-
Module objective / intended learning outcomes	**Knowledge** **K1** : Able to practice medicine by realizing limitations, overcoming personal problems, developing oneself, following refreshment and continuous knowledge improvement and developing knowledge for patient safety. **K2** : Apply the latest basic and clinical medical sciences to manage health problems holistically and comprehensively and apply humanities, community medicine and family medicine to the management of health problems holistically and comprehensively. **Skill** **S1** : Able to practice medicine by realising limitations, overcoming

	personal problems, developing oneself, following refreshment and continuous knowledge improvement and developing knowledge for patient safety. **Competence** **C1** : Able to perform clinical procedures according to his/her authority related to the problem of health by using the principles of clinical epidemiology as well as solid evidence of fact-based medicine to improve diagnosis and for patient safety.
Content	1. Structure and function of DNA and chromosomes in cells a. Structure and function of nucleic acids b. Chromosome structure and function c. DNA and chromosomes in cell division and the cell cycle. 2. Gene structure, gene expression and organisation of the Human Genome a. Protein-Coding Genes: Transcription and translation process b. RNA genes and NonCoding RNA c. Mitochondrial DNA d. Organisation and evolution of the human genome 3. Gene Regulations and Epigenetics a. Genetic regulation of gene expression b. Chromatin modification and epigenetic factors in gene regulation 4. Genetic Variation a. Origins of DNA sequence variation b. DNA Repair c. Types of genetic variation, polymorphism, SNPs and CNVs 5. Single-Gene Disorders: Pattern of inheritance, variation Phenotype. a. Basics of mendelian inheritance patterns. b. Mendelian Phenotype Expression Variation c. Alleles Frequencies in Populations. 6. How genetic variation causes disease a. DNA mutation, small- large scale mutation b. Chromosomal abnormalities c. Effects of pathogenic variants on phenotype 7. Genetic susceptibility mapping and identification approach to diseases 8. Approaches to genetic therapy, principles of genetic therapy and stem cell therapy 9. Cancer genetics and Genomics
Forms of Assessment	MCQ Test 60% Essay Test 20% Assignment 20%
Study and examination requirements and form of examination	**Study and examination requirements:** ● Students must attend 15 minutes before the class start, and 30 minutes before examination start ● Students must switch off all electronic devices (for offline class) ● Students must switch on the camera/video during the class (for online class) ● Students must inform the lecturer if they will not attend the class

	due to sickness, etc. • Students must submit all class assignment before the deadline • Students must attend the exam to get final grade **For examination:** Multiple Choice Question using vignette, Essay Question
Media Employed	Lecture and Power Point Presentation
Reading List	**Compulsory:** 1. Alberts, Jhonson, Lewis, Morgan, Raff, Roberts, Walter. Molecular Biology of the Cell. 6th ed. 2010 2. Tom S, Andrew P.R. Human Molecular Genetics.5th ed. New York ; 2019 **Additional:** 3. Kumar V, Abbas AK, Aster JC. Robbins and Cotran Pathologic Basis of Disease.10th ed. Philadelphia: Saunders; 2018 4. Genetics and Genomics in Medicine. New York, 2014